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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/734,816

12/12/2003

Steven A. Soper

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11/30/2009

PATENT DEPARTMENT

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EXAMINER

LEE, SIN J

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

11/30/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/734,816	Applicant(s) SOPER ET AL.	
	Examiner Sin J. Lee	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-14 is/are rejected.
- 7) ☒ Claim(s) 3, 15 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In view of the amendment, previous 112, second paragraph rejection on claims 1-16 is hereby withdrawn.
2. As previously indicated, the effective filing date of present application is December 12, 2003 because the subject matter of present claim 1 is *not fully* supported by the provisional application (filed on March 27, 2003) – for example, there is no support in the provisional application for all of those reactants listed in the limitation (vi).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 4, 5 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Laulicht et al (US 2007/0275080 A1).

Laulicht et al teaches (see [0132]) that the surface of a polymer capsule can be modified to create functionality such as carboxylic acid groups through oxidation of the polymer capsule surface at the functional locality, by using such means as exposure to UV light. Then, the presence of carboxylic acid groups at the functional locality can allow for an anchoring of larger, often more complex linking groups such as

polyethylene glycol (*which is a polymer*) or biochemical linkers such as the biotin/streptavidin/biotin-substrate linking complex.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1, 2, 4-11, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandow et al (US 6,436,615 B1).

In Fig.2, Brandow teaches the following; first, by imagewise exposure to 193 nm radiation, the polymer having 3-chloromethyl*phenyl* group is oxidized to have –COOH groups in the exposed portions. Further steps such as grafting of ligand Q-Z and EL *Ni* deposition follow (see also, col.4, lines 66-67, col.5, lines 1-45). Brandow teaches (col.5, lines 32-39) that the preferred exposure sources are excimer lasers operating under *ambient* conditions. Since Brandow teaches that the material remaining in the irradiated regions are oxidized species such as carboxylic acid groups, it is the Examiner's position that Brandow teaches present step of selectively exposing the polymer in an oxidizing atmosphere to actinic light with the fluence of light in the exposed portions sufficient to induce photooxidation of polymer sufficient to generate carboxyl groups that remain bound to the polymer surface. Brandow teaches that Q (a group possessing the appropriate combination of physical and chemical properties required for the application) can include single strand *DNA* sequences (col.6, lines 19-21). Brandow also teaches that (col.6, lines 28-38) Q can contain ligand groups such as *thiol*-, amino-, pyridyl-, diphenylphosphino-, or acetylacetonato- and Z can consist of

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aliphatic amine or alcohols. Based on this teaching, it would have been obvious to one skilled in the art to have Q to be thiol or DNA and Z to be alcohol group with a reasonable expectation of providing improved substrate patterning. Brandow's QZ ligand as a whole is equivalent to present reactant because the QZ ligand is being reacted with the -COOH groups to impart chemical functionality (present claim 1 only requires the one or more reactants to react with the bound carboxyl groups to impart chemical functionality). Thus, it is the Examiner's position that Brandow's QZ ligand in which Q is thiol or DNA still teaches present reactant compounds. Thus, Brandow's teaching renders obvious present inventions of claims 1, 2, 4-11, 13 and 14.

Allowable Subject Matter

7. Claims 3, 15 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the cited prior arts teaches or suggests using visible light for the exposure step. None of the cited prior arts teaches or suggests using those polymers substrates of claims 15 and 16.

Response to Arguments

8. Applicants argue that Brandow's Q groups are irrelevant to the present discussion since it was only the Z group, not the Q group that Brandow attached to the surface. However, present claim language of claim 1 only requires that one or more reactants to react with the carboxyl group (the claim language does not specify which part of the reactant to be bound to the carboxyl group). In Brandow, the QZ ligand is a single reactant (it is not two separate compounds), and since Brandow's QZ ligand is

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being reacted with the carboxyl groups to impart chemical functionality (, which is later to be used for EL *Ni* deposition), it is the Examiner's position that Brandow's QZ ligand still meets the limitation of present reactants.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sin J. Lee/
Primary Examiner, Art Unit 1795
November 21, 2009